Physical Sensors Development

- **Contractor: Honeywell**

- **Subcontractor: Sensing & Control division**

- **PI: Richard Alderman**
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- **Duration: 36 months**

- **Funding: $2.7M**

- **Goals: design, build, field test: flow, humidity, pressure and temp sensors**
        -research and prototype CO and H2 concepts

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Customers   -   Applications/Sensor

TRANSPORTATION / BUILDINGS

Avista

Ballard

Cummins

DaimlerChrysler

Ford

GM

International Fuel Cell

John Deere

Mack truck

Plug Power

APPLICATIONS

differential pressure wet - wet

ethanol in gasoline

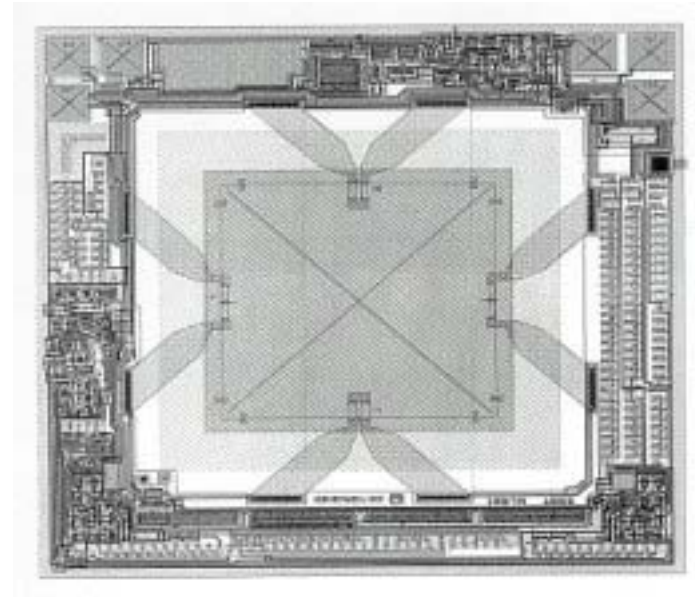hydrogen

methanol in water

hydro carbon vapor

temperature

humidity

mass air flow

liquid level

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Pressure
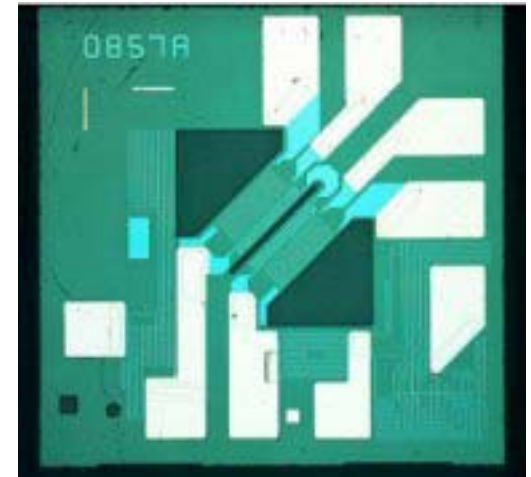

Description: wet - wet differential

Technology: advanced thick film ceramic
                  signal conditioning asic

Range: 0 to 3 psi

Accuracy: 1%

Temperature: -40 to 100C

Response time: <1sec

Size: <2 sq. in.

Target cost: $25@100K

Flow

Description: mass air flow sensor

Technology: rugged fused silca die

Range: 30 to 300 SLPM

Accuracy: 3%

Temperature: -40 to 80C

Response time: <100 msec

Size: 1"x2"x3"

Target cost: $30@100K

0857A

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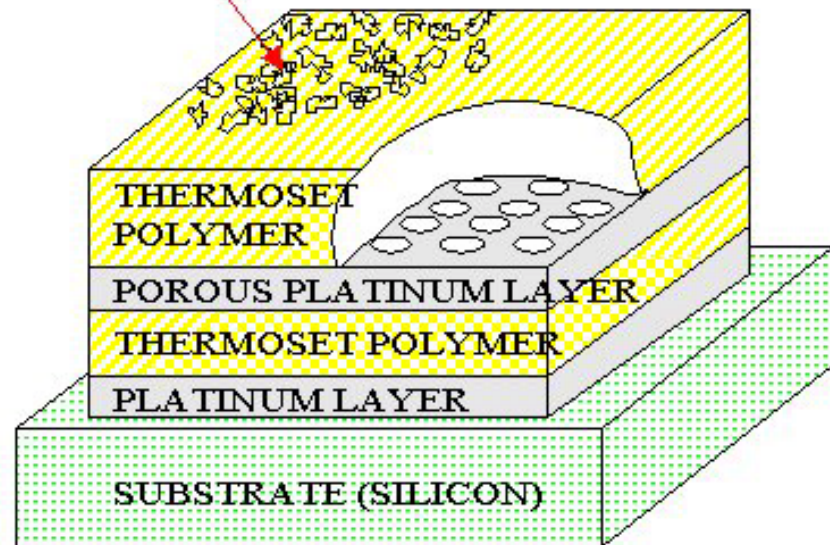
Humidity

Description: relative humidity

Technology: capacitive polymer

Range: 0 to 100%

Accuracy: 1%

Temperature: 30 to 110C

Response time: <30 sec

Size: 1"x2"

Target cost: $35@100K

DIRT, DUST & OIL DOES NOT EFFECT SENSOR

THERMOSET POLYMER

POROUS PLATINUM LAYER

THERMOSET POLYMER

PLATINUM LAYER

SUBSTRATE (SILICON)

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Temperature

Description: temperature

Technology: Platinum thin film RTD

Range: -40 to 150C

Accuracy: 1.5%

Temperature: -40 to 150C

Response time: <0.50 sec

Size: 0.125" probe

Target cost: $15@100K

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Carbon Monoxide

Description: carbon monoxide

Technology: Fabry - Perot
IR detector

Scope: concept R&D
lab bench demo

Range: 1 to 100ppm

Accuracy: 1 to 10% full scale

Temperature: -40 to 150C

Response time: <1 sec

Size: < 2 sq in.

Target cost: $40@100K

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Hydrogen Sensor

Description: hydrogen sensor

Technology: thermal conductivity
fused silica die

Scope: concept R&D
lab bench demo

Range: 1 to 100%

Accuracy: 1 to 10% full scale

Temperature: 70 to 150C

Response time: <1 sec

Size: < 2 sq in.

Target cost: $40@100K

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